

A Comparison of the Data Sources for the Surveillance of Work-Related Carpal Tunnel Syndrome in Massachusetts

Massachusetts Department of Public Health

Letitia Davis, ScD

Helen Wellman, MS

Betsey Gardstein

Bureau of Labor Statistics, Region I

James Hart

Robert Cleary

Paul Sciuchetti

Massachusetts Data Sources for Work-Related CTS

- BLS Annual Survey of Occupational Injuries and Illnesses (SOII)
 - OSHA log cases with one or more days away from work
- Massachusetts SENSOR
 - Workers' compensation lost worktime claims with 5 or more lost workdays
 - *Physician case reports*

Preliminary Finding

From 1994-1997

- Massachusetts SOII
 - an estimated 2,109 cases of work-related CTS
- Massachusetts SENSOR
 - 3,654 lost worktime claims for CTS
 - 453 additional cases reported by physicians

Purpose of Study

Given: Estimated incidence of work-related CTS based on SENSOR far higher than that based on Massachusetts SOII

Research question: Do the two data systems identify the same occupations, industries, populations, and sources of injury for intervention to prevent CTS?

Methods - Data

SENSOR:

- Workers' compensation claims with nature of injury code for CTS, 1994-1997 (N=3,654)
 - Age
 - Gender
 - Industry - Standard Industrial Classification
 - Occupation - Bureau of Census Index of Occupation
- Follow-back survey (N=2149)
 - Reported source and secondary source of injury - BLS Occupational Injury and Illness Classification system

Methods - Data

SENSOR:

- Counts by year and aggregated 1994-1997:
 - Age
 - Gender
 - Industry - Standard Industrial Classification
 - Occupation - Bureau of Census Index of Occupation
- Average annual rates (#cases/10,000 workers) for
 - industry sectors
 - industries (2 and 3 digit)
- Frequency of cases by source of injury

Methods Data

- SOII
 - 3.2 million Massachusetts workers
 - 164,000 private sector establishments in Massachusetts
 - 5,600 establishments in Massachusetts SOII since 1996
 - higher previously (10,000 establishments in 1994)

Methods Data

Massachusetts SOII

- Cases with Nature of Injury code for CTS, 1994-1997
- Annual estimated counts of cases involving days away from work by
 - age, gender
 - industry sector
 - occupation category ,
 - secondary source of injury (4 digit)
- Annual estimated rates (# cases/10,000 FTE's) for state and by industry sector

Methods

- Early on found that Massachusetts SOII too sparse to allow for comparisons of SENSOR findings for specific industries, occupations or sources of injury.
- Revised protocol
 - Compared SENSOR with national SOII - adjusted to take into account the industrial distribution of Massachusetts workforce

Methods Data

National SOII

- Annual estimated counts of cases involving days away from work by:
 - Age, gender
 - industry (sector, 2 and 3 digit)
 - occupation (category and 3 digit census code),
 - Secondary source of injury (4 digit) (50% of reported cases)
- Annual rates (# cases/10,000 FTE's) by industry sector and industry
- Aggregated counts and computed average annual rates by industry for industries with published rates in 3 years
(Standard error estimates not available for aggregated data)

Methods

- Focused on trends and ranks rather than estimates themselves
- Compared trends in overall counts, rates, and M/F ratios by calendar year - SENSOR, Massachusetts and National SOII
- Compared frequencies by industry sector, occupational category and age group, SENSOR, Massachusetts and Nat'l SOII

Methods - Industry Specific Comparison - SENSOR and National SOII

- Compared top 20 industries ranked by counts and average annual rates
- Needed to take industrial composition of Massachusetts into account
 - Generated expected numbers in Massachusetts industries by multiplying average annual national rate x Massachusetts employment x 4
 - Excluded industries with less than 25 expected cases from national high rate industry list
 - National high count list based on expected rather than observed number of cases

Methods - Occupation and Source of Injury Comparison - SENSOR and National SOII

- Compared top 20 occupations ranked by counts
- Compared leading sources of injury ranked by counts

Findings - Overall

- Numbers and rates of CTS decreased over time (SENSOR and National SOII)
- No clear cut trend in Massachusetts SOII

Findings - F/M Ratios

- SENSOR- decline in female but not male claims over time reflected in declining F/M ratio over the 4 year period
- No similar trend in Massachusetts or National SOII
- F/M ratios much higher in Massachusetts SOII than either SENSOR or National SOII (?)

Findings - Age

- Number of young cases (<25 years) notable
- Proportionately more younger cases in Massachusetts SOII (?)
- National SOII and SENSOR age distributions similar

Findings - Industry Sector

- Can't aggregate Massachusetts SOII over years - even industry sector data are too sparse

Findings - Industry

- Only 11 of the SENSOR high rate industries also on the National SOI high rate list
- The 7 highest rate industries in SENSOR were not on the National SOI high rate list

Findings - Industry

- More overlap in SENSOR and National SOII high **count** industry lists
- 15 of top 20 SENSOR high count industries on National SOII high count list

Findings - Occupation

- 15 of 20 SENSOR high count occupations were on the National SOII high count list

Findings - Source of Injury

- 11 of SENSOR high count sources on National SOII high count list
- Top two sources same in both systems
 - Key boards - computer
 - Computers electronic
- Computer-related equipment reported in more than 35% of cases in SENSOR, National and State SOII

Conclusions

- Massachusetts SOI data of limited use in targeting specific industries/occupations for intervention - likely true for all but most common injuries/illnesses in most states
 - BLS should increase state sample size or use its limited resources to aggregating state level data over time and publishing period reports

Conclusions

- Decline in F/M ratio in SENSOR but not SOII suggests SENSOR findings may be due to changes in claim filing by women rather than underlying incidence
- Number of cases < 25 years old in all systems is cause for concern

Conclusions

- Use of National SOII industry CTS rate data of limited use for establishing state high rate industry priorities
- National SOII and SENSOR count data identify many similar industries and occupations for prevention

Conclusions

- Computers are a high priority for prevention
- Options for improving state SOII and making use of other state data systems for CTS surveillance need to be explored

Workers' Compensation Claims for CTS - Case Interviews

N= 1547 cases (response rate 61%)

- 61% surgical treatment
- 64% bilateral disease
- Sample of medical records (N=77):
 - 89% met NIOSH surveillance case definition;
 - 88% had physicians diagnosis of CTS.
 - Most had nerve conduction or electromyography results supporting the diagnosis